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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WEST, JEFFREY R	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/917,904	ELWOOD ET AL.	
	Examiner	Art Unit	
	Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps presented in the claims must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1, 6, 10, 15, and 18 are objected to because of the following informalities:

In claim 1, line 9 and claim 10, line 9, "degrees of Celsius" should be ---degrees Celsius---.

In claims 6, 15, and 18, to avoid problems of antecedent basis, "the percentage gas sensor lifetime hours exceed" should be ---the percentage gas sensor lifetime hours measurement exceeds---.

In claim 18, "a said percentage gas sensor" should be ---said percentage gas sensor---.

Appropriate correction is required.

Claim Rej ctions - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because it recites, "calculating a percentage lifetime hours measurement utilized by the gas sensor for comparison with its respective maximum percentage hours for said gas sensor, wherein the calculation is performed at a temperature of 20 degrees of Celsius." This limitation indicates that the method and/or device performing the calculation is at a temperature of 20 degrees. The specification, however, does not support this limitation and instead indicates that an hour count value is stored in $\%O_2$ lifetime hours used at 20 degrees (see specification page 6, line 5, page 9, lines 6-7, and page 10, line 5). Therefore, the specification does not enable one having ordinary skill in the art how to perform the calculation at a specific temperature as claimed.

Claims 10 and 18 are similarly rejected as failing to comply with the enablement requirement because they also include a step for "calculating a percentage lifetime hours measurement utilized by the gas sensor for comparison with its respective maximum percentage hours for said gas sensor, wherein the calculation is

performed at a temperature of 20 degrees of Celsius" and "means for calculating a percentage lifetime hour measurement utilized by the gas sensor for comparison with its respective maximum percentage hours for said gas sensor, wherein the calculating means includes calculating at a temperature of 20 degrees Celsius."

Claims 2-9, 11-17, and 19-26 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate the lack of enablement present in their respective parent claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, because it recites, "normalizing said adjustment measurement of said percentage gas sensor" while there is no previous mention of any "adjustment measurement". Claim 1 does contain a limitation for "adjusting a percentage gas sensor lifetime hours measurement for a gas sensor" but from this limitation it is unclear to one having ordinary skill in the art whether the "adjustment measurement" being normalized is the percentage lifetime value or the amount of adjustment itself. Claims 10 and 18 are rejected under 35 U.S.C. 112, second paragraph, for containing similar limitations.

Also in the above noted limitation, it is unclear what it means to have a "percentage gas sensor". The previous limitation of "adjusting a percentage gas sensor lifetime hours measurement" is interpreted by the Examiner as adjusting lifetime measurement of a gas sensor with the lifetime measurement in terms of a percentage. It is unclear to one having ordinary skill in the art what is a "percentage gas sensor." Claims 10 and 18 are also rejected under 35 U.S.C. 112, second paragraph, for reciting "said percentage gas sensor" and "a said percentage gas sensor", respectively.

Claim 1 is also rejected as being vague and indefinite because it recites, "calculating a percentage lifetime hours measurement utilized by the gas sensor". The word "utilize" is generally defined as "to put to use, especially to find a profitable or practical use for". This limitation, however, is trying to define a percentage of lifetime hours used/consumed not used/finding a practical use for. It is suggested that applicant reword this limitation from "calculating a percentage lifetime hours measurement utilized" to ---calculating a percentage lifetime hours consumed measurement--- or ---calculating a measurement for the sensor of a percentage lifetime hours used---. Claims 10 and 18 are rejected under 35 U.S.C. 112, second paragraph, because they also include unclear use of the word "utilized".

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, because it recites, "wherein a sensor lifetime value is adjusted and normalized to an hour count". In this limitation it is unclear whether "a sensor lifetime value" is the same as the "percentage gas sensor lifetime hours measurement" or any of the values

determined in claim 1. It is further unclear whether the newly claimed steps of adjusting and normalizing this "sensor lifetime value" are the same as the adjusting and normalizing steps from claim 1 and/or how these steps fit into the order of steps from claim 1. Claim 20 is also rejected under 35 U.S.C. 112, second paragraph, for containing similar limitations.

Claim 4 is rejected as being vague and indefinite because of the limitation, "holding a gas concentration and a gas sensor temperature constant over a previous hour during the normalizing step". In this limitation it is unclear how values can be held constant over a previous hour during the normalization step because this would require applying constraints to a previous hour of time during a current instant of time. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, for containing a similar limitation.

Claims 6, 15, and 18 are rejected as being vague and indefinite because they recite, "a predetermined value of said respective maximum percentage hours for said gas sensor". Since the "said respective maximum percentage hours" is a value itself, in this limitation it is unclear what it means to have a predetermined value of a value.

Claims 11 and 13 are rejected as being vague and indefinite for reciting "said embedded controller tracks the O_2 and CO_2" values/operation times without any previous mention of any O_2 of CO_2 values/operation times in parent claim 10.

Claims 2, 5, 7-9, 12, 14, 16, 17, 19, and 22-26 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the lack of clarity present in their respective parent claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

8. Claims 1, 2, 6, 10-19, and 22-24, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,701,415 to Dutton et al. in view of JP Publication No. 08-233770 to Hatai and further in view of U.S. Patent No. 6,279,377 to Cao.

Dutton discloses a controlled gas atmosphere incubator (column 4, lines 26-30) with a carbon dioxide sensor and an oxygen sensor disposed therein (column 7, lines 30-37 and 64-67) and an embedded controller that accesses a plurality of set points/values (column 10, lines 3-10) and monitors the set points/values for temperature and gas concentration changes to determine a failure condition (column 11, lines 19-45), wherein upon the occurrence of a failure condition, a re-settable alarm interface display is activated to indicate the failure condition to a user (column 11, line 45-49 and column 12, lines 11-16). Dutton also discloses a cumulative clock

(i.e. timer) in the controller for use in the main testing operation (column 11, lines 10-18).

As noted above, Dutton teaches many of the features of the claimed invention. Dutton, however, discloses a general method for testing the operation of an incubator using oxygen and carbon dioxide sensor but doesn't provide a method for testing/predicting the life of the sensors themselves.

Hatai teaches an electrochemical gas sensor and a corresponding method for analyzing the gas sensor for lifetime adjustment values, at predetermined sensor operation time intervals determined by a clock, comprising obtaining lifetime data from the sensor, adjusting the lifetime data obtained based up a stored calculation rule, and comparing the adjusted lifetime data to predetermined thresholds (0013) in order to display warning results to a user in the form of deterioration indications of the sensor (i.e. predetermined values of no deterioration) (abstract). Hatai also teaches performing the adjusting with the calculation rule according to data stored in a look-up table of temperatures ranging from –10 to 50 degrees Celsius, including 20 degrees Celsius, (0015-0018) and further, since Hatai teaches determining the time when the adjusted sensor value has reaches a half deterioration (0020) it is considered inherent that the adjusted sensor value must be compared to its previous maximum value in order to determine when it reaches this point.

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton to include a method for testing/predicting the life of the sensors themselves, as taught by Hatai, because Hatai suggests that the combination would

have provided the user a way to avoid complete failure of the sensors, thereby giving the user time to replace the sensors, by notifying the user of the lifetime by detecting the deterioration of sensitivity easily and accurately (abstract).

While the invention of Dutton and Hatai doesn't specifically disclose performing the adjusting operation every hour, the combination does teach that the adjusting step should be set up at intervals corresponding to the actual environment of the sensor (Hatai, 0022). Therefore, it would have been obvious to one having ordinary skill in the art to specify that the adjusting step be executed hourly if this interval provided suitable accuracy for the current environment.

Further, although the combination of Dutton and Hatai doesn't specifically disclose that the life values are in the form of percentage hours, this limitation is not considered critical to the patentability of the invention since it would have been obvious to one having ordinary skill in the art to express the data in any form desired. Further, as indicated by the cited documents below, the Examiner takes Official Notice that it is well known in the art to determine the life of gas sensors in the form of percentage hours.

As noted above, the invention of Dutton and Hatai teaches many of the features of the claimed invention and while the invention of Dutton and Hatai does disclose adjusting the sensor life values based upon data stored in a table, the combination doesn't specifically define this process as normalizing the adjustments.

Cao teaches a method and apparatus for monitoring oxygen concentration including an oxygen concentration sensor, processor, display (column 3, lines 43-58)

and re-settable alarm (column 5, lines 50-67). Cao also teaches calibrating the monitoring device according to a table having oxygen concentration values, which are a function of pressure and temperature, wherein in order to perform calibration the actual output of the sensors are normalized to expected values defined in the table (column 7, lines 11-28).

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton and Hatai to include specifying that the adjusting step include normalization, as taught by Cao, because, as suggested by Cao, the combination would have accounted for differences in specific sensors used to monitor the gas concentrations in order to provide accurate results (column 7, lines 11-28).

Response to Arguments

9. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

First, Applicant argues that while "[t]he drawings [were] rejected under 37. C.F.R. 1083(a). The Examiner has not suggested or shown which features are absent from the drawings as claimed. Therefore, it is not feasible to make any adjustments to the current drawings, because it is believed that all of the features are shown as claimed." The Examiner asserts that in the Office Action mailed June 04, 2003, the drawings were objected to because "the method steps presented in the claims must be shown or the feature(s) canceled from the claim(s)." Claim 1, for example, includes limitations for a "method of predicting failure of gas sensors in an incubator

environment comprising the steps of: analyzing . . . adjusting . . . normalizing. . . calculating . . . and displaying . . ." The drawings, however, only show a block diagram of a micro controlled system and a user interface. These drawings do not show any of the method steps in, for example, a flow chart. For this reason, the objection to the drawings under 37 CFR 1.83(a) is proper.

Applicant then argues that, with respect to the rejection of claim 10 under 35 U.S.C. 102(b) as being anticipated by International Publication No. WO 96/35944 to Radford et al., that Radford does not teach all of the features of the claimed invention and, further, that "Takai et al. cannot be said to anticipate the method of providing diagnostic capability for a plurality of motor vehicle control units of the present invention as claimed." This argument is confusing since the Examiner has not used any "Takai et al." reference in the outstanding rejection and the invention is drawn to a method of gas sensor failure prediction, not motor vehicle control diagnostics.

Applicant also argues that the inventions of Dutton et al., Hatai, and Cao fail to teach "calculating a percentage lifetime hours measurement at a temperature of 20 degrees Celsius as recited in claim 1 and similarly in claim 18." The Examiner asserts that, as noted in the 35 U.S.C. 112 rejections above, the limitations as claimed are not sufficiently enabled by the specification to indicate to one having ordinary skill in the art how to make/use the invention. Further, as best understood, the specification indicates that a normalization value is a value considered to be normal at 20 degrees Celsius and the invention of Hatai teaches performing an

adjustment according to data stored in a look-up table of temperatures ranging from –10 to 50 degrees Celsius, including 20 degrees Celsius (0015-0018).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

U.S. Patent Application Publication No. 2003/0014226 to Loecher et al. teaches a method and apparatus for providing a polynomial based virtual age estimation for remaining lifetime prediction of a system wherein in order to insure that the cumulative wear directly corresponds to the fraction of life that has elapsed, the virtual age is normalized (0033).

U.S. Patent No. 5,741,413 to Capetanopoulos teaches a method of calibrating and using a gas sensor wherein during the calibrating the environment of the sensor is held at a constant temperature and pressure.

International Publication No. WO 96/35944 to Radford et al. teaches a general incubator including at least one gas sensor disposed therein (page 6, lines 13-14), an embedded controller circuit (Figure 3) for analyzing the at least one gas sensor for imminent failure (page 6, line 20 to page 7, line 2), and an interface display for indicating the occurrence of the gas sensor imminent failure (i.e. video alarm) (page 3, lines 22-27).

Apogee, "Oxygen Sensor (Model O2S)" teaches an oxygen sensor having a life expectancy expressed in percent-hours.

General Monitors, "G-Series Portables" teaches a multi-gas sensor that indicates the remaining life of the sensor in 0-100 percent-life.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone

numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
January 25, 2004

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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